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APPLICATION NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO.
08/788,560	01/24/97	YAMAZAKI	S 0756-1626

EXAMINER

BSM1/0626

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SUITE 600
MCLEAN VA 22102

FAHMY, W

ART UNIT PAPER NUMBER

2508

DATE MAILED: 06/26/97

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

OFFICE ACTION SUMMARY

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 D.C. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

- ☒ Claim(s) 21-33 is/are pending in the application.
- Of the above, claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 21-33 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
- ☐ received.
- ☒ received in Application No. (Series Code/Serial Number) 07/813,071
- ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

- ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- ☒ Notice of Reference Cited, PTO-892
- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Notice of Informal Patent Application, PTO-152

--SEE OFFICE ACTION ON THE FOLLOWING PAGES--

1 Attorney's docket number: 0756-1626

2 Filing Date: 12/26/91

3 Applicant: Yamazaki et al

4 EXAMINER : Wael M.Fahmy

5
6 The title of the invention is not descriptive. A new title is required that
7 is clearly indicative of the invention to which the claims are directed.
8

9 Acknowledgment is made of applicant's claim for foreign priority under
10 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application
11 No. 07/813,071, filed on 12/26/91.

12 As a preliminary matter patent numbers 4,755,805 and 4,712,927
13 cited on the 1449 are not related to any transistor structure, but rather to an
14 entirely different field, thus it is requested that the correct patent numbers be
15 submitted for proper consideration.

16 The following is a quotation of 35 U.S.C. 103(a) which forms the basis
17 for all obviousness rejections set forth in this Office action:

18 (a) A patent may not be obtained though the invention is not identically disclosed or
19 described as set forth in section 102 of this title, if the differences between the subject
20 matter sought to be patented and the prior art are such that the subject matter as a
21 whole would have been obvious at the time the invention was made to a person having
22 ordinary skill in the art to which said subject matter pertains. Patentability shall not be
23 negated by the manner in which the invention was made.

1 Claims 21-24 are rejected under 35 U.S.C. 103(a) as being
2 unpatentable over Tsunekawa in view of Tyson et al.

3 Tsunekawa shows in figs.(1,2) a all claimed subject matter including a
4 boundary region between at least one of the source and drain regions
5 having a greater bandgap than any of said source ,drain and channel
6 regions (it is clear from fig.1 that a portion of region 2 formed by implantation
7 of oxygen or nitrogen is at a boundary between the source and drain regions
8 and that other parts of the source, drain and channel regions have a smaller
9 bandgap), but omits the formation of the LDD as in the claimed invention.

10 However Tyson et al shows in fig.(2) that a source and drain region can
11 incorporate LDD regions (210,220) adjacent the channel region. Therefore it
12 would have been obvious to one of ordinary skill in the art to use the LDD
13 structure of Tyson et al in the source and drain regions of Tsunekawa, since
14 the LDD regions relax the concentration of the electric field which enhance
15 device performance.

16 Claims 25-33 are rejected under 35 U.S.C. 103(a) as being
17 unpatentable over Tsunekawa in view of Tyson et al and Ishizu et al.

18 The device of Tsunekawa in view of Tyson et al discloses all claimed
19 subject matter, but omits the formation of the TFT in an electro-optical
20 device.

21 However Ishizu et al teaches that TFTs are used in electro-optical
22 devices (see col.1, lines 18-33). Therefore it would have been obvious to
23 one of ordinary skill in the art to use the transistor of Tsunekawa in view of

1 Tyson et al in an electro-optical device, since the prior art teaches that TFTs
2 are used in electro-optical devices. As to claims 27,31 and 33 the transistor
3 of Tsunekawa in view of Tyson et al disclose the formation of the carbon or
4 nitrogen doped boundary regions, as to the particular concentration note
5 that the specification contains no disclosure of either the critical nature of
6 the claimed concentration or any unexpected results arising therefrom.
7 Where patentability is said to be based upon particular chosen dimensions
8 or upon another variable recited in a claim, the Applicant must show that the
9 chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16
10 USPQ2d 1934, 1936 (Fed. Cir. 1990). As to claim 32, since oxygen,
11 nitrogen and carbon all achieve a region at the boundary of the channel and
12 the source/drain regions having a higher bandgap than the other regions,
13 the specification does not recite any criticality of why carbon is preferred to
14 oxygen and nitrogen.

15 Claims 21-24 are rejected under 35 U.S.C. 103(a) as being
16 unpatentable over Wilson et al in view of Tyson et al.

17 Wilson et al shows in fig.(3) all claimed subject matter including a
18 boundary region between at least one of the source and drain regions
19 having a greater bandgap than any of said source ,drain and channel
20 regions (the boundary regions 42C are doped with either oxygen or
21 nitrogen), but omits the formation of the LDD as in the claimed invention.

22 However Tyson et al shows in fig.(2) that a source and drain region
23 can incorporate LDD regions (210,220) adjacent the channel region.

1 Therefore it would have been obvious to one of ordinary skill in the art to use
2 the LDD structure of Tyson et al in the source and drain regions of Wilson et
3 al, since the LDD regions relax the concentration of the electric field which
4 enhances device performance.

5 Claims 25-33 are rejected under 35 U.S.C. 103(a) as being
6 unpatentable over Wilson et al in view of Tyson et al and Ishizu et al.

7 The device of Wilson et al in view of Tyson et al discloses all claimed
8 subject matter, but omits the formation of the TFT in an electro optical
9 device.

10 However Ishizu et al teaches that TFTs are used in electro-optical
11 devices (see col.1, lines 18-33). Therefore it would have been obvious to
12 one of ordinary skill in the art to use the transistor of Wilson et al in view of
13 Tyson et al in an electro-optical device, since the prior art teaches that TFTs
14 are used in electro-optical devices. As to claims 27,31 and 33 see above
15 mentioned criticality caselaw. As to claim 32, since oxygen, nitrogen and
16 carbon all achieve a region at the boundary of the channel and the
17 source/drain regions having a higher bandgap than the other regions, the
18 specification does not recite any criticality of why carbon is preferred to
19 oxygen and nitrogen.

The following table shows the field of search for the claimed invention.

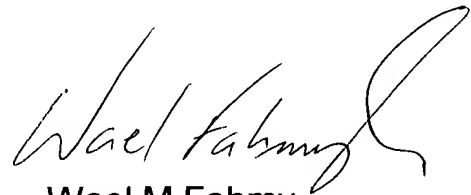
Field of Search	Date
U.S. Class and subclass: 257/57,59,61,66,69,72	6/19/97
Other Documentation: none	
Electronic data base(s): none	

Papers related to this application may be submitted to Group 2500 by facsimile transmission. Papers should be faxed to Group 2500 via the Group 2500 Fax center located in Crystal Plaza 2, room 4 - A11. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2508 Fax Center number is (703) 308-7723 & the backup number is (703) 308-7722. The Group 2508 Fax Center is to be used only for papers related to Group 2508 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to **Examiner Wael M.Fahmy** whose telephone number is **(703) 308-4918**. The Examiner is in the Office generally between the hours of 6:45 AM to 4:15 PM (Eastern Standard Time) Monday through Friday.

1 Any inquiry of a general nature or relating to the status of
2 this application should be directed to the **Group 2500**
3 **Receptionist** whose telephone number is **(703) 308-0956**.

4 WMF
5 20 June 1997


Wael M. Fahmy
Primary Examiner
Art Unit 2508